IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Wade Brown
App. No	:	10/764,012
Filed	:	January 23, 2004
For	:	FILLED POLYMER COMPOSITE AND SYNTHETIC BUILDING MATERIAL COMPOSITIONS
Examiner	:	Alicia Chevalier
Art Unit	:	1794
Conf #	:	8951

DECLARATION UNDER 37 C.F.R. § 1.132 BY INVENTOR, WADE H. BROWN

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I, Wade H. Brown, hereby declare:

1. I am the named inventor in the above-referenced U.S. patent application.

2. I am also the President of Century-Board USA, LLC, the present assignee of the entire right, title, and interest in the above-referenced U.S. patent application.

3. I received my B.A. in Chemistry from the University of Kentucky, with post graduate courses in polymer engineering and advanced chemistry courses.

4. I worked for 21 years as a research chemist for CIBA-GEIGY, a world leader in polymers and polymer additives. My work included additives for polyurethanes, and this involved considerable investigations into the chemistry of urethanes, including aliphatic, aromatic, foamed and coating types. My work resulted in a patent in the area of polymer stabilization. I also worked with urethanes and other polymer systems, investigating the effect of fillers and fibers on the resulting polymer system properties, and the processing of these systems.

5. Following this, I worked for about 5 years at ABB Composites, and then 10 years at Kaiser Composites, again focusing on polymer systems with fibers and fillers, and their processing.

6. Fifteen years ago, I started Ecomat Nevada, Inc. Through this company, we offered licenses to building material firms based on highly filled foamed polyurethane systems. In addition to licensing technology, we invested substantial time, money and effort developing other proprietary polymer compositions with very high loadings of waste fillers.

7. Eight years ago, I started a second company called Century-Board USA, LLC. Through this company, we continued to research and develop new polymer compositions with very high loadings of waste fillers, including polyurethane compositions with very high loadings of waste fillers.

8. As a result of my close involvement in the development of various polymer composite materials and my general knowledge of building products made from the same, I have acquired extensive knowledge of the manner in which such technology has developed over the last 35 years.

9. I am the listed inventor on the present application. I have reviewed the file history for the application and am familiar with the pending claims.

10. In my opinion, each of the pending claims is novel and non-obvious over the prior art. Moreover, each of the pending claims comprises a combination of elements that is patentable as a whole. In just one aspect of those patentable combinations, "the second polyol is between about 5 wt % and about 20 wt %, based on the total weight of the first and second polyols being 100 wt %." In my opinion, this is one of the aspects that supports the patentability of each of the claims as a whole.

11. In support of this opinion, I have included below a summary of tests conducted on several samples of polyurethane composites. These samples represent various embodiments of the invention as described in the claims. In general, these samples were produced by reacting an isocyanate with two polyols, one polyol having a hydroxyl number lower than the other polyol, in the presence of a very large amount of filler. Other ingredients described in the specification of the application were included in the samples, such as chopped fibers and catalyst, but the amount

or concentration was held constant across the samples. Seven series of samples were produced with varying polyol type, polyol concentration, filler type and filler amount. The specific polyol type, filler type and filler amount of each series is outlined in Table 1 below.

Table 1-Series Compositions

Series	FILLER		POLYOL #1				POLYOL #2			
	Type	wt%[1]	Name	Type	OH # (mg KOH/g)[2]	MW[3]	Name	Type	OH # (mg KOH/g)[2]	MW[3]
A	Granite tailings	60	BASF Pluracol GP-430	polyether	398	400	BASF Pluracol 726	polyether	58	3000
B	Fly ash	60	BASF Pluracol GP-430	polyether	398	400	BASF Pluracol 726	polyether	58	3000
C	Granite tailings	72	BASF Pluracol GP-430	polyether	398	400	BASF Pluracol 726	polyether	58	3000
D	Granite tailings	60	Bayer Multranol 4035	polyether	380	438	Chemtura Formez 11-225	polyester	225	500
E	Coal Ash	60	BASF Pluracol GP-430	polyether	398	400	Eagle T-31	polyester	160	932
F	Granite tailings	72	Bayer Multranol 9170	polyether	350	481	Chemtura Formez 11-225	polyester	225	500
G	Coal Ash	60	Bayer Multranol 4035	polyether	380	438	Eagle T-31	polyester	160	932

[1]Based on total weight of composite being 100 wt %
[2]Represents manufacturer's listed average hydroxyl number
[3]Represents manufacturer's listed average molecular weight

12. Within each of the above-referenced series, seven samples were prepared under my supervision comprising different polyol concentrations. Specifically, within each set, samples were prepared wherein the lower hydroxyl number polyol in the composite comprised about 2, 5, 11, 20, 25, 30 and about 40 wt %, based on the total weight of the two polyols being 100 wt %. Each sample was prepared by hand, requiring several mixing steps. After mixing, the resulting composites were poured into a mold box and molded to form sample boards roughly 0.5 x 10 x 11 inches and these were then cut to test bars roughly 0.5 x 0.75 x 10 inches.

13. I tested each sample bar according to ASTM D790 to obtain flexural strength data. The results for each board were averaged together. The average flexural strength data was normalized for sample density using calculations common in the industry. The results of these tests are shown in Table 2 below.

Table 2-Flexural Strength of Series Samples

Series	Sample No.	Wt % Lower Hydroxyl Number Polyol[1]	Flexural Strength (psi)
A	1	2	1601
	2	5	1827
	3	11	1962
	4	20	1687
	5	25	1581
	6	30	1672
	7	40	1615
B	1	2	1768
	2	5	1872
	3	11	1991
	4	20	1890
	5	25	1725
	6	30	1639
	7	40	1789
C	1	2	1348
	2	5	1623
	3	11	1448
	4	20	1415
	5	25	1261
	6	30	1305
	7	40	1187
D	1	2	1257
	2	5	1327
	3	11	1464
	4	20	1481
	5	25	1263
	6	30	1216
	7	40	899

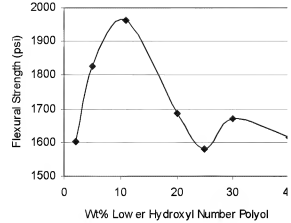
Table 2-Flexural Strength of Series Samples (Continued)

Series	Sample No.	Wt % Lower Hydroxyl Number Polyol[1]	Flexural Strength (psi)
E	1	2	1879
	2	5	1971
	3	11	2047
	4	20	1975
	5	25	1879
	6	30	1573
	7	40	1387
F	1	2	920
	2	5	1533
	3	11	1256
	4	20	1161
	5	25	910
	6	30	1019
	7	40	1081
G	1	2	1301
	2	5	1433
	3	11	1444
	4	20	1694
	5	25	1203
	6	30	1448
	7	40	1541

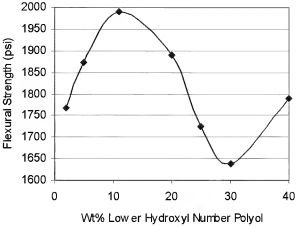
[1] Based on the total weight of the two polyols being 100 wt %

14. This data is presented in graphical form below.

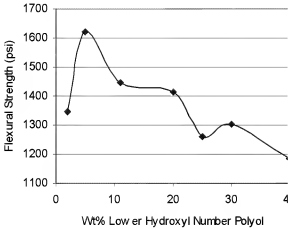
Series A



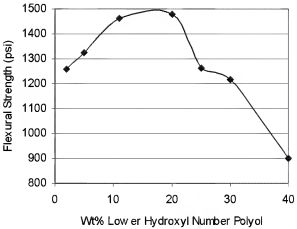
Series B



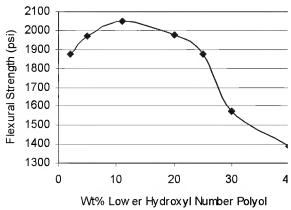
Series C



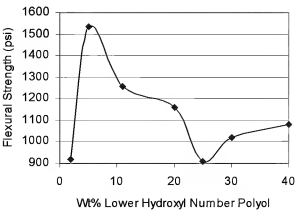
Series D



Series E



Series F



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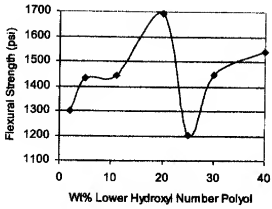
Series G



15.The data indicates improvement in flexural strength for samples which comprise embodiments of the claims. In particular, the samples indicate improved flexural strength where, as in one aspect of the claims, "the second polyol comprises between about 5 wt % and about 20 wt %, based on the total weight of the first and second polyol being 100 wt %."

16.I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Wade H. Brown

5 June 2009
Date

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